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EXAMINER	
MOORE JR, MICHAEL J	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/814,225	YEN ET AL.	
	Examiner	Art Unit	
	Michael J. Moore, Jr.	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 April 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 8/30/05 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statement.

Drawings

2. The drawings are objected to because of the following informalities: In Figure 2, the element "ALR Table 202" should be "ARL Table 202" in order to correspond to the specification.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency.

Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims **1, 8, 9, 11, 15, and 17** are objected to because of the following informalities:

Regarding claim **1**, on line 1, the word "an" before word "VLAN" should be "a".

Regarding claim **8**, on line 3, the word "ports" should be "port". Also, on line 4, the word "is" before the word "active" should be "are".

Regarding claim **9**, on line 3, the word "an" is needed before "ARL". Also, the "comma" after the word "hit" should be removed.

Regarding claim **11**, on line 4, "VID" should be instantiated "VLAN Identifier (VID)" in this first instance. Also, on line 5, "ARL" should be instantiated "Address Resolution Table (ARL)" in this first instance.

Regarding claim **15**, on line 4, "VID" should be instantiated "VLAN Identifier (VID)" in this first instance. Also, on line 4, "ARL" should be instantiated "Address Resolution Table (ARL)" in this first instance.

Regarding claim **17**, on line 3, the word "an" is needed before "ARL".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims **15-18** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, there is not clear support for each "means plus function" element in the specification in view of 35 U.S.C. 112 6th paragraph. It is seen in Figure 1 and the disclosure, how the switch 102 performs the functions recited in claims **15-18**. However, there is not clear support in the disclosure or the drawings of a structure comprising the claimed "means plus function" elements.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims **1-10** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Currently, claim **1** is directed to "non-functional descriptive material *per se*" (table of data) with no useful, concrete, tangible result. Please see "Interim Guidelines on Patentable Subject Matter Eligibility".

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims **1-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art on pages 1-3 of the specification (hereinafter "AAPA") in view of Ullum et al. (U.S. 6,266,705) (hereinafter "Ullum") cited in Applicant's submitted IDS.

Regarding claim **1**, *AAPA* teaches an Ethernet switch (switch) that uses an Address Resolution Table as well as a VLAN table on page 2, paragraph 3, lines 1-3 of the specification.

AAPA also teaches each entry of the ARL storing a VLAN ID (ARL VID), a MAC address, and an action code as spoken of on page 2, paragraph 3, lines 4-6.

AAPA also teaches each entry of the VLAN table storing a VLAN forward map and a VLAN un-tag map as spoken of on page 2, paragraph 3, lines 8-10.

AAPA does not teach where the VLAN table comprises a VLAN identifier (VLAN ID) in more significant bits.

However, *Ullum* teaches a look-up mechanism where a data RAM 340 of Figure 3 contains entries having MAC/VLAN designation pairs that may be located in either LSB or MSB locations in accordance with the particular hash key used as spoken of on column 7, lines 21-40.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, to combine the hash teachings of *Ullum* with the teachings of *AAPA* in order to efficiently locate table entries using a hash key as spoken of on column 7, lines 21-40 of *Ullum*.

Regarding claim **2**, *AAPA* further teaches the use of an action code by a switch to determine which port(s) to send the frame to as spoken of on page 2, paragraph 3, lines 5-7.

Regarding claim **3**, *AAPA* further teaches each entry of the VLAN table storing a VLAN forward map and a VLAN un-tag map as spoken of on page 2, paragraph 3, lines 8-10.

Regarding claim **4**, *AAPA* further teaches where an incoming frame's MAC destination address and the VID are hashed by a switch (converting means) to a 12-bit ARL address which is used to access the ARL table as spoken of on page 2, paragraph 4, lines 3-5.

Regarding claim **5**, *AAPA* further teaches where an incoming frame's MAC destination address and the VID are hashed by a switch (converting means) to a 12-bit ARL address which is used to access the ARL table as spoken of on page 2, paragraph 4, lines 3-5.

Regarding claim **6**, *AAPA* further teaches the switch (comparing means) that compares the VID and MAC address in the ARL table with the incoming frame's VID and MAC destination address, and if they are the same, determines an ARL hit occurred, and the action code in the ARL table is then used to determine which egress port(s) to send the incoming frame to as spoken of on pages 2-3, paragraph 4, lines 5-10.

Regarding claim **7**, *AAPA* further teaches where the switch (accessing means) uses the VID of the incoming frame to access the VLAN table to read the forward map and un-tag map from the associated VLAN entry as spoken of on page 3, paragraph 4, lines 10-13.

AAPA does not teach where the VLAN table comprises a VLAN identifier (VLAN ID) in more significant bits.

However, *Ullum* teaches a look-up mechanism where a data RAM 340 of Figure 3 contains entries having MAC/VLAN designation pairs that may be located in either LSB or MSB locations in accordance with the particular hash key used as spoken of on column 7, lines 21-40.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, to combine the hash teachings of *Ullum* with the teachings of *AAPA* in order to efficiently locate table entries using a hash key as spoken of on column 7, lines 21-40 of *Ullum*.

Regarding claim **8**, *AAPA* further teaches that if there is an ARL hit and the ports indicated by the action code in the ARL table are also active in the forward map, then

the switch (forwarding means) forwards the incoming frame to the identified egress port(s) as spoken of on page 3, paragraph 4, lines 13-15.

Regarding claim **9**, *AAPA* further teaches that if there is not a hit in the ARL table, but there is a match in the VLAN table, the switch (forwarding means) uses the forward map in the VLAN table to forward the incoming frame to the appropriate destination port(s) as spoken of on page 3, paragraph 4, lines 15-18.

Regarding claim **10**, *AAPA* further teaches that if there is not a match in either the VLAN or ARL tables, that the switch (forwarding means) drops the frame as spoken of on page 3, paragraph 4, lines 18-19.

Regarding claim **11**, *AAPA* teaches where an incoming frame's MAC destination address and the VID are hashed (converted) by a switch to a 12-bit ARL address which is used to access the ARL table as spoken of on page 2, paragraph 4, lines 3-5.

AAPA further teaches the switch that compares the VID and MAC address in the ARL table with the incoming frame's VID and MAC destination address, and if they are the same, determines an ARL hit occurred, and the action code in the ARL table is then used to determine which egress port(s) to send the incoming frame to as spoken of on pages 2-3, paragraph 4, lines 5-10.

AAPA further teaches that if there is a match in the VLAN table, the switch uses the forward map in the VLAN table to forward the incoming frame to the appropriate destination port(s) as spoken of on page 3, paragraph 4, lines 15-18.

AAPA does not teach "using the less significant bits of the VID of the incoming frame to access an appropriate entry in a VLAN table" and "comparing a VLAN VID from the VLAN table with more significant bits of the VID of the incoming frame".

However, *Ullum* teaches a look-up mechanism where a data RAM 340 of Figure 3 contains entries having MAC/VLAN designation pairs (VID) that may be located in either LSB or MSB locations in accordance with the particular hash key used as spoken of on column 7, lines 21-40.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, to combine the hash teachings of *Ullum* with the teachings of *AAPA* in order to efficiently locate table entries using a hash key as spoken of on column 7, lines 21-40 of *Ullum*.

Regarding claim **12**, *AAPA* further teaches that if there is an ARL hit and the ports indicated by the action code in the ARL table are also active in the forward map, then the switch (forwarding means) forwards the incoming frame to the identified egress port(s) as spoken of on page 3, paragraph 4, lines 13-15.

Regarding claim **13**, *AAPA* further teaches that if there is not a hit in the ARL table, but there is a match in the VLAN table, the switch (forwarding means) uses the forward map in the VLAN table to forward the incoming frame to the appropriate destination port(s) as spoken of on page 3, paragraph 4, lines 15-18.

Regarding claim **14**, *AAPA* further teaches that if there is not a match in either the VLAN or ARL tables, that the switch (forwarding means) drops the frame as spoken of on page 3, paragraph 4, lines 18-19.

Regarding claim **15**, *AAPA* teaches the switch 102 (apparatus) of Figure 1.

AAPA further teaches where an incoming frame's MAC destination address and the VID are hashed (converted) by a switch (converting means) to a 12-bit ARL address which is used to access the ARL table as spoken of on page 2, paragraph 4, lines 3-5.

AAPA further teaches the switch (comparing means, means for using) that compares the VID and MAC address in the ARL table with the incoming frame's VID and MAC destination address, and if they are the same, determines an ARL hit occurred, and the action code in the ARL table is then used to determine which egress port(s) to send the incoming frame to as spoken of on pages 2-3, paragraph 4, lines 5-10.

AAPA further teaches that if there is a match in the VLAN table, the switch uses the forward map in the VLAN table to forward the incoming frame to the appropriate destination port(s) as spoken of on page 3, paragraph 4, lines 15-18.

AAPA does not teach "means for using the less significant bits of the VID of the incoming frame to access an appropriate entry in a VLAN table" and "comparing means for comparing a VLAN VID from the VLAN table with more significant bits of the VID of the incoming frame".

However, *Ullum* teaches a look-up mechanism where a data RAM 340 of Figure 3 contains entries having MAC/VLAN designation pairs (VID) that may be located in either LSB or MSB locations in accordance with the particular hash key used as spoken of on column 7, lines 21-40.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, to combine the hash teachings of *Ullum* with the teachings of *AAPA* in order to efficiently locate table entries using a hash key as spoken of on column 7, lines 21-40 of *Ullum*.

Regarding claim **16**, *AAPA* further teaches that if there is an ARL hit and the ports indicated by the action code in the ARL table are also active in the forward map, then the switch (forwarding means) forwards the incoming frame to the identified egress port(s) as spoken of on page 3, paragraph 4, lines 13-15.

Regarding claim **17**, *AAPA* further teaches that if there is not a hit in the ARL table, but there is a match in the VLAN table, the switch (forwarding means) uses the forward map in the VLAN table to forward the incoming frame to the appropriate destination port(s) as spoken of on page 3, paragraph 4, lines 15-18.

Regarding claim **18**, *AAPA* further teaches that if there is not a match in either the VLAN or ARL tables, that the switch (dropping means) drops the frame as spoken of on page 3, paragraph 4, lines 18-19.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kadambi et al. (U.S. 6,430,188), Bordonaro et al. (U.S. 6,798,775), Katzri et al. (U.S. 6,639,901), and Kaniz et al. (U.S. 7,099,325) are other references considered pertinent to this application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Moore, Jr. whose telephone number is (571)

272-3168. The examiner can normally be reached on Monday-Friday (7:30am - 4:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing F. Chan can be reached at (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael J. Moore, Jr.

Michael J. Moore, Jr.
Examiner
Art Unit 2619